

Mr. Theodore Lyman presented the following:—

DESCRIPTIONS OF NEW OPHIURIDÆ, BELONGING TO THE SMITHSONIAN INSTITUTION AND TO THE MUSEUM OF COMPARATIVE ZOOLOGY AT CAMBRIDGE.

AMPHIURA (Forbes).

Amphiura Pugetana, (Lyman,) sp. nov.

Description of a Specimen. Diameter of disc, 3.5 millim. Length of arms, 24.5 millim. Greatest width of arm, without spines, .7 millim. From outer edge of mouth-shield to outer corner of opposite mouth-slit, 1.5 millim. Mouth-shields nearly diamond shaped, the outer and side angles slightly rounded; length to breadth, .3 : .2. Under arm-plates five-sided, with the fifth angle directed inward; length to breadth, near base of arm, .5 : .4. Upper arm-plates bounded within by a strong arch, without by a slight curve; their lateral sides short; length to breadth, near base of arm, .5 : .7, — they do not quite touch each other. Scales of disc mostly rounded, smaller below than above; those above of pretty even size, with a few little ones. Arm-spines 3; sometimes 4, on joints close to disc; evenly tapering, moderately stout, of even lengths; length, near disc, .5 millim. Tentacle-scales 2, small and rounded, placed obliquely side by side. Color, in alcohol: disc, above, light greenish gray; below lighter, radial shields darker; arms, above and below, straw-color, with a faint white line, running lengthwise above.

Variations. The angles of the mouth-shields may be more or less rounded. Among younger specimens, the scales of the disc are more even in size, and the primary plates have their corners not entirely rounded off. The proportion of the arms to the disc varies somewhat, thus: diameter of disc to length of arms, as 3.5 : 24.5, 3 : 21, or 2.5 : 22.5.

This species is distinguished from others of the genus, as follows: *A. Orstedii* has the radial shields longer and separated a part of their length; 4 or 5 spines and upper arm-plates broader. *A. Puntarenæ* has rather longer arms, a small notch in the outer side of the under arm-plates, and the upper arm-plates regularly oval. *A. violacea* has mouth-shields proportionately much smaller

and the arms shorter; the color also must be quite distinct. *A. microdiscus* has, even in small specimens, the upper arm-plates touching each other and twice as broad as long. *A. tenera* has upper and lower arm-plates and mouth-shields of a different form. *A. squamata* has differently shaped mouth-shields and much shorter arms. *A. tenuis* stands very near the present species; but the arms, in specimens of the same size, are not more than half as long.

Locality, Puget Sound. Dr. Kennerly.

Smithsonian Institution, Nos. 1037, 1053, 1057.

Amphiura occidentalis, (Lyman,) sp. nov.

Description of a Specimen. Diameter of disc, 5.8 millim. Outer edge of mouth-shield to outer corner of opposite mouth-slit, 2.2 millim. Greatest width of arm, without spines, 1.3 millim. As the arms were somewhat broken, their length could not well be measured; but, from their proportions, they must have been at least eight times the diameter of the disc. Mouth-papillæ rounded; innermost one stoutest, and pointing to centre of mouth. Mouth-shields small, oval diamond-shaped, the angles being so rounded as to give almost a true oval; outer angle making a very slight peak; length to breadth, .4 : .5. Side mouth-shields not meeting within. Under arm-plates square oblong; angles somewhat rounded; outer side with a slightly reëntering curve; 2d plate differs from the rest, being five-sided, with its fifth angle directed inward; it is separated from the rudimentary 1st plate, by narrow prolongations of the side arm-plates. The next three or four plates are in like manner separated, while those further out on the arm are close together, which is an inversion of the usual order. Length of plates to breadth, .4 : .4. Upper arm-plates oblong, with rounded corners; outer side with a slightly reëntering curve; length to breadth, .5 : 1. Scales of disc fine, smooth, and even, above and below; primary plates distinguished by greater size. Arm-spines 3, not tapering, rather stout, rounded at the end, flattened, about as long as the joints. Two small, rounded tentacle-scales. Color, in alcohol: disc, above, faint greenish gray; arms and under surface, straw-color.

Variations. The mouth-shields may be quite oval; the 2d under arm-plate, instead of being five-sided, may resemble the rest.

This species is distinguished from *A. geminata*, by the shape of the mouth-shields and of the upper and lower arm-plates, and in having the mouth-papillæ of the same size; from *A. Chilensis*, by having two tentacle-scales, instead of one.

Locality, Monterey, Cal. Mr. Sayla.

Smithsonian Institution, No. 1054, and No. 1063 (?).

No. 1063 is from Puget Sound, and may be another species. The spines are blunter, the under scales of the disc larger and less crowded, and the under arm-plates rather more rounded. More specimens will settle the question.

Amphiura urtica, (Lyman,) sp. nov.

Description of a Specimen. Diameter of disc, 6 millim. Outer side of mouth-shield to outer corner of opposite mouth-slit, 2 millim. Width of arm without spines, .8 millim. Length of arms, about eleven times diameter of disc, (a specimen having a diameter of disc 5.5 millim. had 55 millim. length of arm). Mouth-papillæ rounded and bead-like. Mouth-shields nearly square, with an angle directed inward; outer angle truncated and making a slight peak; other angles slightly rounded. Length to breadth, .5 : .5. Side mouth-shields not meeting within. Upper arm-plates irregular oval, outer side less curved than inner side; length to breadth, .5 : .7. Under arm-plates scarcely touching each other; inner one five-sided, the rest nearly square, with a strong notch in the outer side; length to breadth, .4 : .4. Scales of disc fine and even; some of those near margin of disc bearing very fine prickles on their edges. Primary plates not conspicuous. Arm-spines 3, about as long as the joints, delicate, sharp, regularly tapering. Tentacle-scales 2, both of them small and delicate. Color, in alcohol: upper and under surface of disc dark greenish gray, with a margin of light; arms light straw-color.

Variations. The mouth-shields vary in shape to an unusual degree; sometimes they have a strong peak without, and again none at all; they may be nearly rectangular, or almost oval, and some are not far from round. The under arm-plates may be more or less pentagonal; but, in the adult, most of them are nearly square. The young, with a disc 2.5 millim. in diameter, have the under arm-plates pentagonal, with a deep notch in their outer side, and separated by the side arm-plates; they have also,

on the back of the disc, a conspicuous rosette of round, primary scales.

This species differs from *A. occidentalis*, in its notched under arm-plates, sharp spines, and prickly scales of the disc. It is a somewhat aberrant species, and by its prickly scales approaches *Amphiura scabriuscula*.

Locality, Puget Sound. Dr. Kennerly.

Smithsonian Institution, No. 1041.

Amphiura Wurdemanii, (Lyman,) sp. nov.

Description of a Specimen. Diameter of disc, 9.5 millim. From outer edge of mouth-shield to outer corner of opposite mouth-slit, 3.5 millim. Width of arm, without spines, 2.2 millim. Arms remarkably flat, wide, and little tapering; as they were broken, the length could not be known, but it seemed not less than ten times the diameter of the disc. Teeth broad and flat, with free edge a little curved. Mouth-papillæ 3 on each side, rounded and bead-like; innermost one placed below the teeth, and running somewhat upward. Mouth-shields shaped something like the sole of a shoe, very long and narrow, small, with their outer end rounded, and their inner one a rounded point, wider within than without; length to breadth, .8 : .5. Side mouth-shields almost as large as mouth-shields proper, broader without than within, somewhat curved. Under arm-plates squarish, rather broader than long, overlapping each other a little; outer side bounded by a slightly reëntering curve, corners rounded; length to breadth, (13th plate,) .5 : .7. Upper arm-plates very short and broad, overlapping, bounded without by a reëntering curve; outer corners strongly rounded, length to breadth, .4 : 1.7; they are occasionally broken in two. Scales of disc fine, of pretty even size, rather thicker than are usually found in the genus; those below somewhat finer; around edge of disc, a little fence of small, flat, narrow scales, or papillæ, standing upright; this fence is interrupted opposite the radial shields. Radial shields broad, blunt, pear-seed shaped, sometimes separated by a wedge of three or four scales, sometimes joined by their sides; length to breadth, 2 : 1. Arm-spines 3, short, stout, broad, rounded at the end, somewhat flattened, a little longer than joints, nearly alike in shape and size. Tentacle-scales 2, short, broad, and thin, with curved edges.

Color, in alcohol: above, disc nearly white; arms straw-color, with irregular bands of dark brown; below, arms straw-color, interbrachial spaces white, mouth-shields brown.

This species belongs with those *Amphiuræ* that have the upper row of the lower scales of the disc strongly developed and standing upright, thus making a sort of fence. It differs from *A. septa*, in the shape of the mouth-shields, and in wanting spines on the upper surface of the disc; from *A. marginata*, in the irregular arrangement of the disc-scales, the different proportions of the arm-plates, &c.

Locality, Captiva Key, Charlotte's Harbor, Florida. Mr. Wurdeman.

Museum of Comparative Zoölogy, Cambridge.

OPHIOGLYPHA, (Lyman.)

*Οφις. γλυφή (notch).

Synonyme: *Ophiura*, (Forbes, non Lamk.)

The genus *Ophiura*, as defined by Forbes and as used by Dr. Lütken, cannot stand. Dr. Lütken himself points out the fact, that Lamarck, in his first edition of "Système des Animaux sans Vertèbres," (1801,) took, as the type of his genus *Ophiura*, *Asterias longicauda*, (Linck.) which is *Ophioderma longicauda*, (Müll. & Trosch.) *Ophiura*, then, is the proper generic name for *Ophioderma*, and *Ophioderma* must be dropped. It becomes therefore necessary to give a new name to the genus called *Ophiura* by Forbes, and I propose that of *Ophioglypha*.

Ophioglypha Lütkenii, (Lyman,) sp. nov.

Description of a Specimen. Diameter of the disc, 18 millim. Outer edge of mouth-shield to outer corner of opposite mouth-slit, 8.5 millim. Width of arm, without spines, 3.5 millim. Length of arm, 90 millim. Mouth-papillæ like thorns; a bunch of about ten at the point of the jaw, and two or three scattered ones, on each side, placed above the scales of innermost pair of tentacle-pores. Teeth about 9; long, narrow, flat, rather sharp, arranged sometimes in single, sometimes in double rows. Mouth-shields shield-shaped, with an angle turned inward, and outer side rounded; lateral corners somewhat projecting; length to breadth, 3:3. Under arm-plates, at base of arm, broad, triangular, with

lateral corners somewhat rounded; length to breadth, 1:2.5. Further out on arm, the plates, as is usual in the genus, grow smaller and smaller, from being encroached on by the side arm-plates. Upper arm-plates much broader than long, and having the outer and inner sides straight and parallel; length to breadth, near base of arm, 1.2:3.5. Scales of disc, above and below, not arched or swelled, but lying very flat and evenly; primary plates rounded, and conspicuous by their size. Notches in disc, at base of arms, deep, admitting fully four arm-plates. Comb on the edges of each notch made up of thick, flat, spreading papillæ, crowded side by side, in a continuous line. These papillæ are only 6 or 7; they decrease in length as they pass under the disc, where they join the narrow, toothed edge that runs along the margin of each genital slit. On base of arm proper, no comb, or line of papillæ. Arm-spines 3, tapering, sharp; upper one longest, and equal to about $1\frac{1}{2}$ joints; lowest one shortest, and equal to a little less than one joint. Tentacle-scales of innermost pair of pores short, stout, crowded, flattened; usually 4 or 5 on outer side, and 4, somewhat smaller, on inner side, of each pore. Rest of tentacles with only one round and rather thick scale, but there may also be a little tooth, just outside the tentacle. Color, in alcohol: above, bluish gray, (a sort of clay-color,) with darker markings; the arms the same, with darker bands; below, arms whitish; inter-brachial spaces of a purplish hue, with white spots.

This species is nearest *O. Sarsii*, but differs in the want of a row of papillæ on the base of the arm, above; in having the papillæ of the arm-comb and of the inner pair of tentacle-pores more crowded and blunter; in the finer and sharper mouth-papillæ, &c.

Locality, Puget Sound. Dr. Kennerly.

Smithsonian Institution, No. 1039.

There are also, in the Smithsonian collection, specimens from Puget Sound, which closely resemble the young of *O. Sarsii*; but, as they are not very well preserved, they must remain for the present in doubt.

OPHIURA, (Lamk. non Forbes.)

Ophioderma, (Müll. & Trosch.) *Ophiura teres*, (Lyman.) sp. nov.

Description of a Specimen. Diameter of disc, 32 millim.

Outer edge of mouth-shield to outer corner of opposite mouth-slit, 12 millim. Width of arm, without spines, 7 millim. Length of arm, 133 millim. Mouth-papillæ, about 18 to each angle of mouth, small, tooth-like, somewhat crowded, the innermost, and the outermost but one, on each side, broader and larger than their neighbors. Teeth broad, flat, short, with the free edge curved, the upper ones more pointed. Mouth-shields very broad heart-shape, usually presenting three rounded lobes, of which one is directed inward; length to breadth, 2.5 : 3.5. Side mouth-shields covered by granulation of disc. Under arm-plates small, squarish, bounded without by three sides, with much rounded angles, and within by a slightly curved line; length to breadth, (13th plate,) 1.5 : 2. The first five plates are smaller and narrower; and, between the 1st and 2d, 2d and 3d, and 3d and 4th, there is a pair of pores. Upper arm-plates very short and wide; length to breadth, 1.7 : 6.5. All the plates, except those just at the tip of the arm, are broken in irregular pieces; those near base of arm usually in 5; those near its tip, in 3, or 4; so that the upper surface seems covered with an irregular mosaic. Granulation of disc fine and even, covering radial shields and the whole disc, above and below; near base of arms, above, are sometimes one or two little naked plates of variable size. Arm-spines short, flat, tapering, rather stout, nine in number; three lowest ones rather longer than the rest, and lowest one longest of all; upper ones about half as long as side arm-plates. Two tentacle-scales, longer than broad, flattened, outside one rather shorter and cut off more square at the end. Color, in alcohol: above, purplish brown, with upper arm-plates closely speckled with lighter; below, chewing apparatus, lowest arm-spines, and under arm-plates yellowish white; the rest purplish brown.

Variations. The mouth-shields may differ somewhat in shape; and the under arm-plates may be light brown.

This species at once strikes the eye by its short, rounded arms, covered above by a multitude of irregular pieces. It is distinguished from *O. Panamensis*, by broken arm-plates, proportionately shorter arms, and absence of radial shields; from *O. variegata*, by proportionately shorter arms, granulated side mouth-shields, &c. It most resembles the dark variety of *O. cinerea* (*O. Antillarum*, Ltk.) of the West Indies, but differs in having shorter arms and covered radial shields.

Locality, Panama. Rev. T. Powell.

Smithsonian Institution, No. 1051.

There is a specimen in the Smithsonian Institution (No. 1055) which may be the young of this species; it has the arms somewhat longer, however, in proportion, and the pattern of the color is quite different; the mouth-shields also are more rounded. It is from Panama.

OPHIOPHOLIS, (Müll. & Trosch.)

Ophiopholis Kennerlyi, (Lyman,) sp. nov.

Description of a Specimen. Diameter of disc, 8 millim. Outer edge of mouth-shield to outer corner of opposite mouth-slit, 3.4 millim. Width of arm, without spines, 2 millim. Length of arm, 35.3 millim. Mouth-papillæ thin, flat, square, with corners rounded; three on each side. Teeth short, broad, square, stout. Mouth-shields very closely soldered with side mouth-shields; rather small, nearly oval; length to breadth, .7 : 1. Under arm-plates nearly square, corners a little rounded, and outer side bounded by a slightly reëntering curve; length to breadth, 1 : 1. Side arm-plates small, and little prominent. Upper arm-plates irregular oval, sometimes broken in two, more or less encroached on by supplementary pieces, which bound their outer and lateral sides; length to breadth, near base of arm, .8 : 1.5. The supplementary pieces form a close line; they are thick and angular, vary somewhat in size, and, near base of arm, from seven to ten in number; further out, fewer; and, near the tip, none at all. Disc, above, closely and evenly covered with round grains, among which appear a few small, round, primary plates; one in centre and one or two in each brachial space; none at all in the inter-brachial spaces; diameter of central plate, .7 millim. Disc, below, closely set with short, stout, smooth spines, about .3 millim. long. Arm-spines very stout, short, thick, rounded; the longest about length of arm-joints; lowest one much the shortest, blunt, conical; 2d spine same shape, but longer; 3d and 4th longest, broad, thick, and blunt; 5th same shape, but shorter; usually 5 spines, sometimes, close to disc, 6; near tip of arm the lower spine has the form of a double hook. Color, in alcohol: purplish pink, with obscure bands of a darker shade on arms; an obscure line of whitish running lengthwise of the arms; in the position of

each radial shield, an irregular patch of white; below, interbrachial spaces mottled, reddish and white; mouth-apparatus whitish; lower arm-plates whitish, edged with pink; other parts same as upper surface, but lighter.

Variations. A specimen of about the same size as the preceding, had usually three, instead of two, primary plates in each brachial space on the upper surface of the disc, also a distinct line of white, running quite round the disc, near its edge. A young one, with a disc 3 millim. in diameter, had arms 12.5 millim. in length. The arm-spines were more slender, and were thorny, as were also the spines and grains of the disc. In the centre of the disc a patch of white, and another at the base of each arm.

This species is interesting, as being the second of a genus which before had but one member. It is distinguished from *O. aculeata*, by the close and regular granulation of the disc, without spines above, and by having no primary plates in the *interbrachial* spaces. It seems, also, to be a much smaller species.

Locality, Puget Sound. Dr. Kennerly.

Smithsonian Institution, No. 1062.

OPHIOTHRIX, (Müll. & Trosch.)

Ophiothrix lineata, (Lyman,) sp. nov.

Description of a Specimen. Diameter of disc, 10 millim. From outer edge of mouth-shield to outer corner of opposite mouth-slit, 4.5 millim. Width of arm, without spines, 2 millim. Length of arm, 63 millim. Tooth-papillæ fine, numerous, cylindrical, resembling short, blunt spines. Mouth-shields broad oval, with a slight peak toward mouth; length to breadth, 1 : 1.5. Disc, above, with large radial shields, which are smooth, or very nearly so, shaped like an elongated triangle, the acute angle being turned inward, separated by a distinct stripe; length to breadth, 2.8 : 1.7; the narrow brachial and broad interbrachial spaces form ten stripes, radiating from the centre; both centre and stripes are covered with elongated scales, (only to be seen on dried specimens,) and these, again, bear many little grains, each with a crown of thorns; below, interbrachial spaces quite naked. Upper arm-plates broad hexagonal, with corners a little rounded, the two side angles more acute than the others; length to breadth, .7 : 1.5. Under arm-plates nearly oval, but with some

indications of angles; length to breadth, .8:1.2. Arm-spines rather stout, flattened, cut off square at the end, varying in length; about six in number on joints close to disc; two upper ones much the stoutest and longest, and of about equal length, viz: 2.7 millim.; sometimes, however, the upper one is very short and stout; three lowest spines minute and slender, the longest not longer than .8 millim.; a little further out on arm only five spines, two large, one medium, and two small. The large spines have, on their flat sides, diagonal rows of smooth, microscopic tubercles, which give them a wavy, or corrugated appearance. One tentacle-scale, represented by a microscopic thorn. Color, in alcohol: above, disc uniform, light, Indian red; arms dull purplish, with a very distinct longitudinal line of black, bounded on each side by a clear white line; spines glassy, with a pink hue; below, mouth-apparatus and under arm-plates white; interbrachial spaces Indian red without, but yellowish toward the mouth.

Variations. The number of spines sometimes rises to nine, of which five are large and four very small. The mouth-shields, instead of being regularly oval, may have their lateral corners quite sharp.

This species may be readily distinguished from all others of Florida, by the granulation of the disc, the character of the spines, and the regular form of the upper arm-plates.

Locality, east coast of Florida. Prof. Agassiz.

Museum of Comparative Zoölogy, Cambridge.

CORRECTIONS IN THE NOMENCLATURE OF OPHIURIDÆ.

No one has yet been able to identify Say's *Ophiura appressa*. It is evidently a true *Ophiura*, (*Ophioderma*, M. & T.) but the question is, which species? *O. serpens*, *guttata*, *brevicauda*, and *variegata* disagree with Say's description, in having all the arm-spines of equal length. *O. cinerea* (*Antillarum*, Ltk.) has radial shields, and has the upper arm-plates broken. *O. rubicunda* disagrees in having radial shields, and in color. *O. squamosissima* differs in its peculiar scaly arms. Finally, *O. elaps* disagrees in the number and form of its spines. No species remains but *O. virescens*, described by Dr. Lütken, and this is doubtless the species previously described by Say; first, because the *gray* variety agrees perfectly with Say's description; second, because it is

abundant on the coast of Florida; and third, because it is *not* any of the known Florida or West Indian species. *Ophioderma virescens* (Ltk.) should therefore be written *Ophiura appressa*, (Say.)

Ophioderma Antillarum (Ltk.) agrees with Müller and Troschel's description of *Ophioderma cinereum*, if the same sized animals be compared; and *O. cinereum* does not agree with any other known member of the genus. Unless, therefore, a direct comparison of the original specimen in the Vienna Museum gives a different result, *cinereum* must take the precedence, and the name must be written *Ophiura cinerea*.

Asterias cordifera (Bosc) is considered by Dr. Lütken as identical with a species from the West Indies, described by him as *Amphiura cordifera*. This cannot well be. *Amphiura cordifera* (Ltk.) is not found at all in Carolina, where Bosc described his *Asterias* as common. A slight comparison of the descriptions will show that Lütken's Ophiuran disagrees with that of Bosc, in the length of the arms, form of the disc-scales, separation of the radial shields, &c. On the other hand, it is plain that *Asterias cordifera* is *Ophiura elongata* (Say); for this species, therefore, the name *Amphiura cordifera* must be reserved, and a new specific name given to *Amphiura cordifera*, (Ltk.)

Ophionereis triloba (Ltk.) is the same as *Ophiolepis annulata*, (Le Conte.) It should therefore be written *Ophionereis annulata*. Dr. Le Conte mistook one tentacle-scale for two.

Concerning the Ophiuran faunæ that characterize the western coasts of Europe and of North America, and the eastern coast of North America, including the West Indies, not enough is known to give fully reliable information. But some characteristic limits may, nevertheless, be pointed out. Starting with the northern seas of Europe, north of 50°, we find several species, such as *Ophiopholis aculeata*, *Ophioglypha Sarsii*, and *Ophiacantha spinulosa*, that pass northward and westward, through the cold temperate and frigid regions, and then follow the coasts of Greenland and America southward, reaching nearly to lat. 40°, or about 10° further south than they appear on the European coast. On the other hand, there are species, such as *Amphiura filiformis* and *A. brachiata*, that do not pass to the American shores; and others, such as *Amphiura tenuis* and *Ophiolepis* (?) *robusta*, (Ayres,)

that do not pass to the European shores. Thus, there are two faunæ, quite distinct in some species, but having others also in common, that pass from one to the other, through the Arctic seas. Crossing now the American continent, we find, near lat. 50°, the familiar forms of an *Ophiopholis*, very like *Ophiopholis aculeata*, and an *Amphiura* closely resembling *A. tenuis*; there is still further an *Ophioglypha* which at once recalls *O. Sarsii*; yet all these are distinct species, illustrating faunæ of a similar character. Returning now to the east coast, and passing south of Cape Cod, lat. 42°, we come on new species and leave the others behind. Here is seen the genus *Ophiura*, (*O. olivacea*), an adventurous traveller from more southern waters. At Charleston, near lat. 32°, a set of species quite novel again surprises the naturalist; here are *Ophiothrix angulata*, *Amphiura cordifera*, and the slender-armed *Amphiura gracillima*. This group has some analogy to that found in the southern Mediterranean, but the resemblances are faint, and no longer strike us like those of the northern faunæ. Still going southward, the fauna again changes, and near Cape Florida, lat. 26°, the animal world of the Gulf of Mexico and the Antilles opens upon us, with all its richness. Here are the characteristic *Ophiocoma crassispina*, *Ophiura appressa*, *Ophiopsila Rusei*, *Ophiothrix Orstedii*, and many others. In Central America, crossing the few miles of land that separate the two great oceans, we are surprised to find an Ophiuran fauna, the counterpart of that of the Gulf; a fauna that is wonderful for its close similarity and for its invariable difference. An unpractised eye might well confound *Ophionereis reticulata* with *O. annulata*, *Ophiocoma crassispina* with *O. Ethiops*, and *Ophiothrix violacea* with *O. spiculata*. Of the coast of California not enough is known to make any comparisons.

In reference to this paper, Prof. Agassiz made some remarks on the principle which he thought ought to govern zoölogical nomenclature; viz: that each species should be indicated, not necessarily by the name of the first describer of the species nor by that of the one who established the true genus, but by his who combines originally or afterward the true generic and specific